

WE CLAIM:

1. A low-profile implantable device for promoting blood flow, the device comprising:

a blood chamber having a blood chamber port, the blood chamber being in communication with a source of blood;

a fluid chamber having a fluid chamber port, the fluid chamber being in communication with a source of fluid pressure; and

a flexible membrane separating a portion of the blood chamber from a portion of the fluid chamber;

wherein when fluid enters the fluid chamber through the fluid chamber port, the flexible membrane moves further into the blood chamber causing any blood therein to flow out of the blood chamber through the blood chamber port; and

wherein when fluid exits the fluid chamber through the fluid chamber port, the flexible membrane moves further into the fluid chamber causing any blood in the blood chamber to flow into the blood chamber through the blood chamber port.

2. The device of claim 1, further comprising:

a blood conduit in communication with the blood chamber port at one end.

3. The device of claim 2, further comprising:

a tip attached to the blood conduit at an end opposite to the end where the blood chamber port is attached.

4. The device of claim 3, wherein the tip is attachable to body tissue without need for a suture anastomosis.

5. The device of claim 3, wherein the tip has an anchoring mechanism that attaches the tip to body tissue.

6. The device of claim 1, wherein the blood chamber has a maximum volume capacity of 60 mL.

7. The device of claim 1, wherein the blood chamber has a maximum volume capacity of 35 mL.

8. The device of claim 1, wherein the blood chamber has a maximum volume capacity of 10 mL.

9. The device of claim 1, further comprising:

a fluid conduit in communication with the fluid chamber port at one end and the source of fluid pressure at another end.

10. The device of claim 1, wherein such device is implantable within the anterior mediastinal space.

11. The device of claim 1, wherein the source of blood is any one of aorta, pulmonary artery or heart.

12. A low-profile implantable device for promoting blood flow, the device comprising:

means for storing blood, the means for storing blood being in communication with a source of blood;

means for storing fluid, the means for storing fluid being in communication with a source of fluid pressure; and

means for controlling blood and fluid storage, the means for controlling blood and fluid storage being in communication with both the means for storing blood and the means for storing fluid;

wherein when fluid enters the means for storing fluid, the means for controlling blood and fluid storage causes blood to flow out the means for storing blood; and

wherein when fluid exits the means for storing fluid, the means for controlling blood and fluid storage causes blood to flow into the means for storing blood.

13. The device of claim 12, further comprising:

means for transporting blood in communication with the means for storing blood.

14. The device of claim 13, further comprising:

means for collecting blood in communication with the means for transporting blood.

15. The device of claim 14, wherein the means for collecting blood is attachable to body tissue without need for a suture anastomosis.

16. The device of claim 14, wherein the means for collecting blood includes a means for locking that locks the means for collecting blood onto body tissue.

17. The device of claim 12, wherein the means for storing blood has a maximum volume capacity of 60 mL.

18. The device of claim 12, wherein the means for storing blood has a maximum volume capacity of 35 mL.

19. The device of claim 12, wherein the means for storing blood has a maximum volume capacity of 10 mL.

20. The device of claim 12, further comprising:

means for transporting fluid in communication with the means for storing fluid and the source of fluid pressure.

21. The device of claim 12, wherein such device is implantable within the anterior mediastinal space.

22. The device of claim 12, wherein the source of blood is any one of aorta, pulmonary artery or heart.

23. A method of promoting blood flow, the method comprising:

providing a blood chamber having a blood chamber port, the blood chamber being in communication with a source of blood;

providing a fluid chamber having a fluid chamber port, the fluid chamber being in communication with a source of fluid pressure;

providing a flexible membrane separating a portion of the blood chamber from a portion of the fluid chamber;

flowing fluid into the fluid chamber through the fluid chamber port;

causing movement of the flexible membrane into the blood chamber; and

flowing blood out of the blood chamber through the blood chamber port.

24. The method of claim 23, further comprising:

providing a blood conduit in communication with the blood chamber port at one end.

25. The method of claim 24, further comprising:

providing a tip attached to the blood conduit at an end opposite to the end where the blood chamber port is attached.

26. The method of claim 25, further comprising:

attaching the tip to body tissue without use of sutures anastomosis.

27. The method of claim 25, wherein the tip has a locking mechanism that attaches the tip to body tissue.

28. The method of claim 23, wherein the blood chamber has a maximum volume capacity of 60 mL.

29. The method of claim 23, wherein the blood chamber has a maximum volume capacity of 35 mL.

30. The method of claim 23, wherein the blood chamber has a maximum volume capacity of 10 mL.

31. The method of claim 23, wherein the blood chamber and the fluid chamber are implantable within the anterior mediastinal space.

32. The method of claim 23, wherein the blood flow is promoted in any one of aorta, pulmonary artery or heart.